This dissertation reports on a design research project about textiles in the material practice of architects. Targeting practicing architects, its aim is to understand how textiles are currently part of their material practice, factors influencing their use and non-use of textiles, and how awareness of their benefits may be raised. The project's three research questions are thus: 1) How are textiles currently used by architects? 2) Which challenges to the use of textiles in architecture can be found in the material practice of architects? 3) How can the use of textiles in architecture be stimulated? Based on Donald Schön's view of design as reflective practice, material practice is defined as how architects work with, choose and apply materials. To reach the aim, the project integrates literature from material science, engineering design, textile engineering and design, as well as architecture, and conducts empirical studies using first hand face-to-face interviews with practicing architects and then workshop-based experiments with architecture students. The interviews were used to answer the first two research questions by analysing the current situation. This showed that architects, even though it is to a limited extent, use textiles in their designs in different ways and in their design process and an awareness of opportunities with their use in architecture. However, four dilemmas and the high integration of material considerations in the architectural design process make the use of textiles difficult. The influence of experience, cost and legislation are yet three factors that explain non-use of textiles. The analysis also pointed to the importance of material samples for the material choice, but also limitations concerning how they are used by, and presented to architects. Based on this analysis of the current situation five experiments were carried out to probe further into how awareness of the opportunities with the use of textiles may be raised, and into ways of stimulating the use of textiles in architecture. The first two experiments involved architects and other professional stakeholders in the design of more healing hospital environments using a textile design game and multi-material model making. Then, three experiments in workshops with architecture students explored the use of textiles in sketch model making, as a way of sketching ideas for how textiles can be used in office environments. The experiments show that by experimenting with representations of textiles, materials that exhibit and imitate properties of textiles, and physical samples of actual textiles, awareness and understanding increase, and ultimately stimulate architects' use of textiles. Core contributions include discussions of the definition of textiles in the context of architecture and of the place of textiles in material classifications as well as a number of interactive experiments that may easily be conducted by architectural firms, contributing with new knowledge on how the use of textiles may be increased among architects.